2011
3

The DRILLER

Gen. D. W. Eisenhower

Gen. Geo. C. Marshall

Adm. E. King

Adm. W. Leahy

Gen. D. A. Mac Arthur

Gen. H. Arnold

A MESSAGE FROM OUR 5-STAR GENERALS AND ADMIRALS

TO THE AMERICAN PEOPLE:

Your sons, husbands and brothers who are standing today upon the battlefronts are fighting for more than victory in war. They are fighting for a new world of freedom and peace.

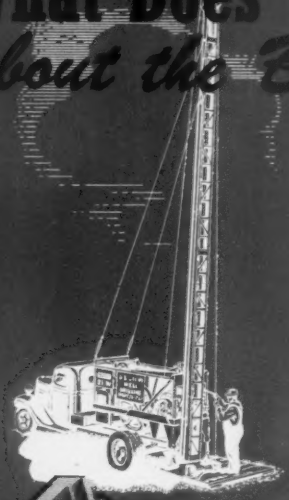
We, upon whom has been placed the responsibility of leading the American forces, appeal to you with all possible earnestness to invest in War Bonds to the fullest extent of your capacity.

Give us not only the needed implements of war, but the assurance and backing of a united people so necessary to hasten the victory and speed the return of your fighting men.

Wm. D. Leahy
E. J. King
Chester W. Nimitz
H. H. Arnold

VOLUME 19 JUNE, 1945 NUMBER 6

What Does This Picture Tell You about the Bucyrus-Erie 21-W?



Just examine the picture below, showing the frame and machinery of the 21-W, and you'll see that . . .

1. . . . the 21-W, like all Bucyrus-Eries, has an all-steel, electric welded box frame that keeps engine, reels, shafts, and gears in smooth working alignment.
2. . . . plenty of strength is provided where strength is needed, yet there is no excess weight.
3. . . . the accurately-machined, close-fitting parts are compactly arranged without sacrificing accessibility for maintenance or repair.
4. . . . the 21-W has the same direct-drive drilling motion that has helped make Bucyrus-Eries the hardest hitting drills available anywhere.
5. . . . the 21W has the simplicity characteristic of efficient design. There are no complicated "gadgets" to cause trouble.
6. . . . belt drive, reels, etc., are fully guarded for maximum safety.

4W45

BUCYRUS ERIE

The points above are a few of the many reasons why drillers everywhere are getting effective long-life performance with their 21-Ws on wells to 500 feet. They are reasons why it will pay you to make your next rig a 21-W.

BUCYRUS-ERIE CO.

Evansville, Ind. South Milwaukee, Wis.

RELIABILITY of Peerless Pumps never has been so evident as during the war. Countless factories, plants, farms and municipalities rely on them to give unfaltering service. Thousands of Peerless Pumps have been in operation for more than 10 years without need for repair. Precise factory methods insure continued operation. Because of the exclusive engineering design, construction and fine workmanship of the bowl and impeller assembly, original efficiencies are closely maintained over a greatly extended performance period.

Representatives are located in every State.
Peerless Distributors and Direct Factory

ARMY E NAVY
PEERLESS PUMPS

FEATURES
(Turbine Type)

Water-cooled head bearings.

Choice of oil or water lubrication.

Double Bearings in each bowl.

Fully-enclosed impellers. Double Seal impellers.

PEERLESS PUMPS

PEERLESS PUMP DIVISION
Food Machinery Corporation

TURBINE
HI-LIFT
HYDRO-FOIL

301 W. Ave. 26, Los Angeles 31, Calif. • 1250 Camden Ave. S.W., Canton 6, Ohio • *Other Factories:* San Jose 5, Fresno 16, Calif.

Three Way Business

Circumstances, some ten years ago, forced this lead-and-zinc-country driller to branch out from prospect drilling. Now he's glad they did.

WATER WELLS
BLAST HOLES
PROSPECTING

• At the controls of his Bucyrus-Erie 22-W, Hauser is shown on a recent water well job at Georgetown, Wisconsin. At the left is Vaughn "Irish" Burns, Hauser's operator.

THE more varieties of drilling you're familiar with, the busier you'll be!' That just about summarizes the drilling policy of George M. Hauser of Cuba City, Wisconsin, who divides his time between water well, blast hole, and prospect drilling.

Originally a prospecting driller exclusively, Hauser went into water well work in the depression years of the early thirties and more recently added blast hole drilling to his line. The result is that he now has a triple-sided business that keeps him constantly on the go. The word "busy" has real meaning for him.

For the past four years he's had one machine drilling blast holes almost constantly in the Dubuque Stone Products Co. quarry located at the eastern edge of Dubuque, Iowa. This rig, a wooden-frame machine patterned after a Sparta, averages one 50-foot hole per day in the quarry's limestone. Holes are spaced 15 feet apart and 15 feet back from the edge of the bank. Each hole is

loaded with 300 pounds of powder and a maximum of seven holes are shot at one time.

At first as many as a dozen holes were set off simultaneously, but the resulting blasts caused too many broken windows and similar disturbances in the city of Dubuque, with a consequence of complaints and a prohibiting ordinance.

The man who handles most of the quarry drilling for Hauser is Vaughn "Irish" Burns — Hauser's principal operator for years and, since the manpower shortage became so acute, his *only* full time assistant. Hauser's 17-year old son—John—has been of considerable help on Saturdays and in the summer when school is not in session, but he's scheduled to enter the Navy upon his graduation.

Another source of help until the last year or so was Hauser's father—widely known as "Joe"—a driller of more than 40 years' experience and the man who educated George in the techniques of prospect drilling. He has retired from active drilling now and George can no longer count on his expert help.

It is easy to understand why the elder Hauser and his son after him at first concentrated on prospecting work. Cuba City is smack in the middle of the lead and zinc mining region of southwestern Wisconsin which during times of prosperity operated at virtual boom level. As long as the demand for lead and zinc continued, the mine operators were constantly in the search for new ore

(Continued on page 16)

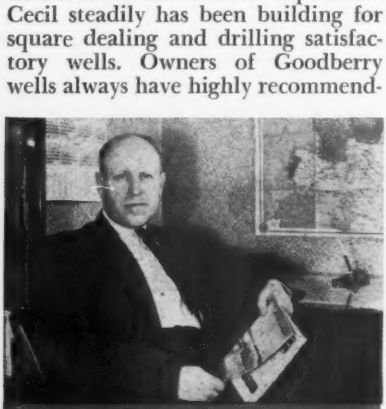
• On a 50-foot bench in the Dubuque Stone Products Co. quarry, "Irish" Burns drills blast holes with the Hauser "Sporta".

Square Dealing FOR CANADIAN

It's hard drilling in the rocks north of Lake Ontario, but Cecil Goodberry has earned a reputation for getting good water, as this story will testify. Square dealing, careful workmanship, and efficiency keep his business humming in Canada.

TEN YEARS AGO, Cecil Goodberry of Verona, Ontario, began from scratch with one small drilling outfit until today, in spite of tough drilling in his locality, he has built up a very prosperous well drilling business with more orders booked ahead than he can handle.

What brings all the business? Important in the list of reasons since he started is the enviable reputation Cecil steadily has been building for square dealing and drilling satisfactory wells. Owners of Goodberry wells always have highly recommended his services to any neighbor who needs a new well.



• Well drilling business is transacted in a separate office in Goodberry's home. The neatness of this office suggests efficiency and customers feel they are dealing with an authority in water wells from its atmosphere.

The knowledge Goodberry has acquired of local geological formations has given him marked success in locating water. This has helped his reputation tremendously for many times he has found water at 60 or 70 feet in areas where 300-foot wells have been unsuccessful. He cites the case of a farmer who invested $1000 and got only a dry well. Cecil drilled on a small hill just across the road from this expensive failure and reached a good supply of sparkling water at 70 feet.

Looking after business promptly also has helped this Canadian driller reach success. He uses his own time to visit prospects, make collections, investigate complaints, and purchase needed equipment and supplies. In this way he has been able to keep abreast of his rapidly growing business and exercise proper control of every detail.

Earthquake Affects Wells

Another factor contributing to the present rush of new business is the drying up of many wells due, perhaps, to water levels which appear to have lowered considerably during the past year. Some ascribe the low-

BUILDS REPUTATION

DRILLER by J. C. Montgomery

ering of the table to an earthquake which occurred in August, 1944. The center of this disturbance was located about 100 miles east of Verona, but the temblors were felt for hundreds of miles beyond. Although Goodberry's attention has been called to at least two instances of previously unfailing wells drying up, he also has heard of neighboring wells which had been dry for years that began to flow after the quake.

The headquarters of Goodberry's operations is 25 miles north of the Canadian city of Kingston on the eastern end of Lake Ontario. For fifty miles around Verona, which roughly comprises this driller's territory, the country is hilly and rolls over land dotted with many lakes thick with wooded areas, all underlaid with rock.

Drills Wells in Snow Storms

Many parts of this district are sparsely populated and have poor roads. Jobs often are far apart and moving difficult. Added to these handicaps during the winter of 1944-45 was more than four feet of snow that slowed work, but there was such a heavy demand for wells that all three drilling outfits were kept in operation except for short delays caused by blocked roads.

The combination of dry wells and deep snow last winter caused great hardship on some of the farms. It was impossible to drive cattle to water or to transport water to them. Demands for wells grew so insistent that Cecil and his men often went out into hazardous, blustery, below zero weather to help some farmer save his livestock when the men would much have preferred to remain in the warm comfort of their homes.

Six men are employed by Cecil Goodberry to operate his three drill rigs. He drills farm, residential, and

(Continued on page 18)

• Overhead view of drill, showing Goodberry's method of lashing tools in place with chain so they will be in position to begin drilling as soon as the derrick is erected on the next job.

The DRILLER

A JOURNAL FOR WATER WELL DRILLERS

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Save Old Copies For Helpful Hints

RECENTLY a well drilling contractor referred to a nicely bound volume containing the past year's issues of THE DRILLER. At the time he was interested in calling attention to a certain drilling condition and used his journals to illustrate the point. Other bound volumes in his library went back to 1935.

Just as this driller is doing, we believe saving every issue of your journal is an excellent practice. Although our position is only to relate how other drillers handle their problems, we do know the publication monthly presents very valuable drilling suggestions that can be used to advantage continually.

Letters frequently ask for well drilling information. We try to answer each letter promptly and with the most expert advice obtainable. Those problems of particular interest—along with their suggested solutions—are reproduced in the "Mailbag" column. In this manner a wealth of well drilling information is accumulated for your benefit.

In reply to many requests, however, we regret our inability to furnish certain past issues. Continued paper problems prevent building a reserve stock but—and this is important—whenever we cannot supply the copy requested we always try to offer the full information desired with a personal letter.

We urge you to save each issue of THE DRILLER in a suitable folder for handy reference and invite you to write us whenever an answer to a drilling problem is needed.

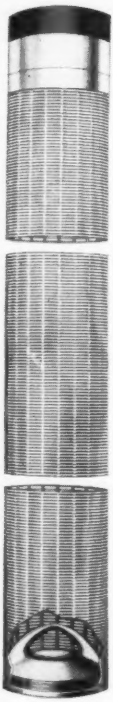
Well Drillers Plan For Postwar Boom

STATISTICS released by F. W. Dodge Corporation in May evidenced a mounting demand for postwar construction. This fact should vitally interest every well driller who wishes to maintain prominence in postwar drilling.

Most building plans are ready to "break" as soon as government financing and approval is given. Public and private projects, large and small, include construction of golf courses, health institutions, retail stores, factory offices, suburban homes and others demanding air-conditioning systems and supplies of good water.

Although the report stated there may be some delay in construction activity—due to material and manpower shortages rather than pent-up desires—well contractors will be wise to make bids and plans now to put in needed wells.

A frank challenge... and here's our answer:



COOK WW Strainers have a *patented feature* that definitely settles the question of rigidity, durability and efficiency.

COOK Strainers are CALKED under pressure, by an exclusive process, thus avoiding: 1. Hard, brittle spots in wire, due to change in temper caused by applied heat (welding). 2. Change in chemical composition of wire, due to more volatile elements being lost because of applied heat. 3. Limitations in kinds of alloys that may be employed.

Hence, COOK Strainers can be made from any iron, copper or nickel alloys. Refined Iron, Silicon Bronze and famous Red Brass are standard.

COOK Strainers are SAFE, because strong; EFFICIENT, because of largest inlet area consistent with strength; DURABLE, because of size of wire and supporting bars and because of no physical and chemical changes in composition of material during construction; ADAPTABLE, because of a variety of strainer connections and fittings to select from to meet all methods of installations.

* *This Cook non-clog construction provides the largest inlet area consistent with safe margin of strength.*

Magnified view of rigidly calked unions of wire and bars . . . a Patented Cook Construction.

Have all COOK facts for comparison before ordering that next strainer.

Cook WW Strainer for Plain and Gravel-Wall wells.

COOK

CALKED WW STRAINERS

A. D. COOK, INC. LAWRENCEBURG, INDIANA

NEWS OF THE MONTH

Bill In Congress Is Protested By New York Drillers

MEMBERS of the Empire State Water Well Drillers' Association April 11 voiced opposition to a portion of a bill now before congress requesting an appropriation of $15,000,000 for ground water supply investigations.

The association recorded their resolution that commercial drillers in the United States should be allowed to bid and drill the test wells rather than enable the U. S. Geological Survey to undertake this phase of the program. Unanimous opinions stated private industry can do the job more efficiently and economically and believed that government competing with industry is an undesirable principle.

Instructive talks by Jack Miller, Clayton Mark & Co. Sales Engineer; Mr. Warsall, New York State Dynamite Inspector; and Harry Hurd and Mr. G. Walley of Northrup Supply Corp. also featured the meeting.

Survey Shows Rise In Ground Waters

GROUND-WATER supplies as measured by the U. S. Geological Survey the past six months indicated normal to favorable water conditions. The recent report stated the only exceptions were in heavily pumped areas and in certain drought-stricken localities.

Water content of snow was considerably higher than that of 1944 and non-record-breaking floods indicated a recharge of ground-water occurred to lessen excessive runoff, the report stated.

Certain key wells supplying irrigation water continued at low levels but general storage aggregates about 90 per cent of last year's available reserves. Except for two southwestern states, the report believed that projects depending on stored water most likely will have adequate supplies for the coming irrigation season.

Michigan Wellmen Will Meet June 23

DELIVERY of new water well equipment will be the featured discussion of dealers and jobbers attending the one-day conference of the Michigan Well Drillers' Association at Battle Creek, Michigan, June 23, Harold Armstrong, secretary-treasurer, has announced.

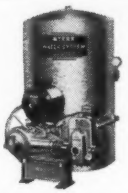
Also included in the day's agenda are election of officers, noon luncheon with speakers' introductions, and evening banquet and floor show.

Cook Appoints Slee

APPOINTMENT of Robert W. Slee as General Sales Manager of pump, strainer and ejector divisions of A. D. Cook, Inc., Lawrenceburg, Indiana, has been announced. Mr. Slee formerly headed Wiley-Slee Associates, Chicago, specializing in sanitation and will direct sales and expansion of post-war markets of Cook products.

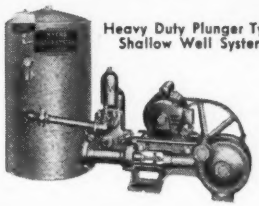
Included in Mr. Slee's duties will be the supervision of service and product development of deep well turbine pumps, well strainers, and automatic water systems.

SURE, THE *new baby*
GETS THE MOST ATTENTION,
BUT...



Plunger Type Shallow Well System

Plunger Type Deep Well System.



Heavy Duty Plunger Type Shallow Well System

Look at Your Big Market for the COMPLETE MYERS LINE

A MESSAGE TO MYERS DEALERS

The new Myers "H" Series *Ejecto* is something to get excited over. It's a water system with a big future! But don't forget that it's only part of the *complete* Myers line which includes types and sizes for every prospect in your big water system market: Farm families — non-farm families — commercial, industrial and institutional prospects. Keep one eye on your complete mass market — and the other eye on the complete Myers line. That's the way to make your Myers franchise most profitable.

TAKE OFF YOUR HAT TO MYERS PUMPS and WATER SYSTEMS

THE F. E. MYERS & BRO. CO.
DEPT. C-54, ASHLAND, OHIO

NORTH EAST MAGNETO MAKES HISTORY!
Used on Packard Rolls-Royce engines on Mustang, Warhawk and Hurricane fighters—Mosquito and Lancaster bombers.
DELCO APPLIANCE
Peacetime Products
Delco Heat Oil Burner
Automatic Coal Stoker
Radios and Conditioners (Oil and Gas Fired)
Delco Water Systems
Delco-Light and Power Plants
Delco Aephonaire Motor
Delco Appliance Blower
Allied fighter planes and bombers are achieving new records in high altitude flying because of the reliable operation of North East magnetos at altitudes up to 50,000 feet above sea level. Simple and original in design, the North East magneto needs no supercharger, has no complicated electrical circuits and is light in weight—it meets the challenge of the enemy.
The same advanced engineering that enables us to manufacture North East magnetos and other precision-built war products today, will help us to produce superior peacetime appliances for you after Victory.
DELCO APPLIANCE
DIVISION of GENERAL MOTORS
Rochester, New York
Speed the Victory!
BUY WAR BONDS

This half-page two-color advertisement appears in:

BETTER HOMES & GARDENS
May, 1945

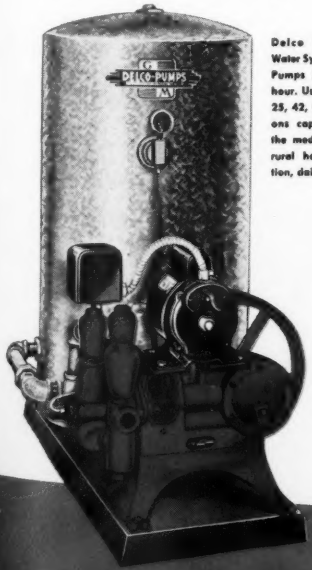
COUNTRY GENTLEMEN
June, 1945

SATURDAY EVENING POST
June 30, 1945

SPEED THE VICTORY!
BUY MORE WAR BONDS

Wartime Research Improves Peacetime DELCO Water Systems

MEETING military requirements for engine generators, gun directors, machine gun mounts, aneroid switches, North East magnetos, motors and other specialized equipment for mechanized warfare, has resulted in improved manufacturing techniques.



Delco Shallow Well Water System, Model AH. Pumps 250 gallons per hour. Used with tanks of 25, 42, 82, and 120 gallons capacity. Ideal for the medium sized farm, rural home, filling station, dairy, etc.

Experience gained in building these wartime products will be applied to peacetime production of our Shallow Well, Deep Well and Delco-Jet Water Systems. From our assembly lines will come DELCO Water Systems of improved design, more efficient performance—and greater *salability*.

Aggressive dealers in all parts of the country are preparing now to cash in on the big demand for DELCO Water Systems. A franchise may still be available in your territory. Mail the coupon today!

GENERAL MOTORS
DELCO WATER SYSTEMS

DELCO APPLIANCE DIVISION, Dept. D65
General Motors Corporation, Rochester 1, N. Y.

I am interested in your Plan for Dealers.

Name .....

Street .....

City ..... State .....

FROM THE MAILBAG

This page is open to any of our readers having questions to ask relating to drilling, driving pipe, dressing bits, etc. All letters will be answered promptly by experienced drillers and engineers who are qualified to give intelligent advice on these subjects. We will publish as many letters of general interest as space will permit. Address: The Driller, South Milwaukee, Wis.

Dear Sir:

We have been forge dressing approximately size 8" bits all the while at this Oil Well which has broken many records in Cable Tool drilling, and we have encountered a great deal of very hard and severe formations, which wear down a bit very quickly, lasting only a few hours sometimes, and even with a very good temper in the bits, and I really would appreciate more information on how to do this hard surfacing with Stoody Self Hardening rods and Vanadium Self-hardening rods, as I have had experience with the oxy-acetylene torch and use it now as I am the tool dresser at this Oil Well.

I would be pleased to receive all the information I can about this method of self hardening as it will probably save me considerable work and help to keep full gauge bits and clean water courses, enabling us to make a good straight hole as we are at a very great depth for cable tools.

S. K. Alberta, Canada

While we grant that hard surfacing has possibilities and it is admitted that this has been used by some drilling contractors with varying success, we are not convinced that the practice of hard surfacing drill bits has been developed to a point where we can recommend it generally.

We have found that satisfactory results have been obtained with bits faced with hard surface welding rod but this success has been confined in general to operations in softer materials such as limestone. For drilling hard material, such as hard limestone, sandstone, granite, trap, etc., results have not been generally satisfactory. The main difficulty no doubt is in getting the hard surfacing material properly applied to the bits so as to prevent checking and spalling of the steel.

It has been found to be of particular advantage in hard surfacing bits to first apply a thin layer of low carbon stainless steel of the 18-8 variety. Coated electrodes of this material are available in which the carbon does not exceed .07%. On this material there can be deposited effectively hard surfacing of the nature of Haschrome, Stoody self hardening or plain carbon rods of approximately 1.00% carbon. In this manner a really hard coating may be obtained without undue cracking or spalling. It is not necessary to renew the stainless coating each time which furnishes an excellent bond between the parent metal and the hard surfacing.

Dear Sirs:

I would like further information on hard surfacing. The rock we drill is a very hard dolomite mixed with flint. It is not unusual to dress five to six bits daily on 30 to 40 feet of hole. After 20 years of hand forging I will certainly give hard surfacing a try.

R. W. Missouri.

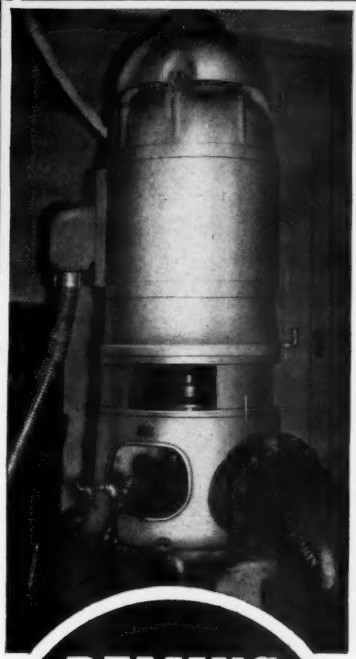
Hard surfacing has been tried by various drilling contractors with varying success and we hesitate to say whether it might be successfully applied to your operations. Usually bits that have been hard surfaced stand up quite well in softer formations, but hard surfacing is not so effective in hard rock drilling such as dolomite, granite, flint, etc.

The important thing is to see that

(Continued on page 21)

256,608,000 GALLONS OF WATER

Pumped by a Deming Deep Well Turbine and not one cent spent for repairs



● A factory official reported: "Our Deming Turbine Pump has delivered 256,608,000 gallons of water in 27 months of continuous service. We have not spent one cent for repairs and the pump is running as smoothly and efficiently as the day it was installed."

That's the kind of pump performance that helps to build and to ***keep*** satisfied customers for you, Mr. Well Driller!

Write for illustrated catalog No. 4700-8 which contains full information about Deming Deep Well Turbine Pumps.

DEMING
Water Lubricated
TURBINE PUMPS

THE DEMING CO. · SALEM, OHIO

Three Way . . .

(Continued from page 5)

deposits which they could exploit in line with their plans for expansion.

That meant plenty of work for drillers like the Hausers, who put down the test holes by which the ore could be discovered. It was good drilling, too. Offsetting the fact that the rate per foot was lower than water well work was the redeeming feature that as soon as one hole was completed another had to be drilled not far away. This meant almost continuous drilling and easily compensated for the lower rate per foot.

Switches to Well Drilling

It was good while it lasted. But the general business depression following the 1929 crash hit the mines fast. Many of them shut down completely, others continued at an extremely low ebb. Few had any thoughts of expansion, so there was practically no prospecting work. Hauser's knowledge of formations would be, of course, just as helpful in water well work as it had been in prospecting—so his switch to water well drilling was a natural one, and successful. In recent years the mines have again become active and prospecting has again become a sizeable part of Hauser's total volume of business.

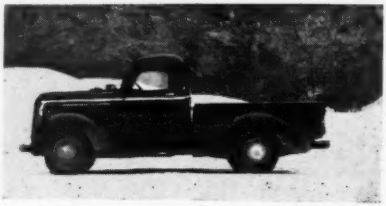
In terms of annual footage, Hauser's work at present is divided as follows: water well, 2500; blast hole, 7000; prospecting, 2500. Hauser drills only 6-inch holes regardless of the type of work. His water wells average from 100 to 350 feet in depth and are drilled principally for farms and suburban homes.

For water well drilling, Hauser uses a Bucyrus-Erie 22-W machine, using the same machine for much of his prospecting. He operates the rig himself most of the time, calling on "Irish" for help when the situation demands.

A short time ago George had the good fortune of lining up six wells all within a mile or two of each other —near the Wisconsin-Illinois border in the vicinity of Menominee, Illinois—a plan which Hauser finds convenient and profitable. All were drilled to approximately the same depth — 210 feet — and each one brought water in about the same quantity—20 gpm.

Limestone and sandstone are among the principal rock formations of the region, occurring at depths varying from 4 to 30 feet. The ore bearing formations are termed locally as blue ground, gray ground, "oil" rock, and "glass" rock. The latter is a very hard rock with no grain. When given a sharp blow with a hammer it shatters into pieces very similar to slivers of glass.

It was a prospecting job which brought Hauser's toughest fishing problem several years ago. Putting down hole for Vinegar Hill Zinc Co. near Shullsburg, Hauser had the misfortune of getting a set of jars locked in the hole at 150 feet as a result of a slight cave-in by which loose rocks wedged in around the jars. To loosen the jars, Hauser ran down a bumper, but it too was stuck. Through twisting, though, he got the bumper back around the cable and pulled it out. He then took



• For carrying tools, supplies, etc., to and from jobs, Hauser uses this pick up truck. A quarry face forms the background here.

off the drill line, attaching it to a block and falls. Next he ran down a small tool string to drill around the stuck tools and free them. This worked, and with a slight amount of jarring the tools were freed.

Crowbar Causes Trouble

Another memorable fishing job occurred right after last Hallowe'en on the blast hole job. Some Dubuque youngsters decided it would be great sport to complicate Hauser's drilling by dropping a crowbar to the bottom of the drill hole which was then down to 40 feet.

The following day Irish Burns ran down the bit and knew very quickly that something was all wrong. Investigating, he lowered the bailer, felt it strike something, and then rapidly hoisted. The object came up with the bailer but slipped back into the hole almost immediately, giving Burns just enough of a glance to enable him to identify the crow bar. It took three days to fish it out—the retrieve being made finally with an improvised fishing tool, made in the quarry's blacksmith shop.

Keeping bits in top shape is one of Hauser's "musts" for successful drilling — the principal means by which he avoids fishing jobs. Another is the matter of keeping the drill hole constantly clean while drilling in order to make the best drilling progress.

Third — and as important as any — is the matter of cooperating and staying on good terms with his competitors. He respects them and they him—there's no room for ill feeling. Quiet, soft spoken, and straight thinking, Hauser goes about his business with little fanfare — but with the steadiness you know bespeaks success.

MOR-SPRING'S "Extra Give" PAYS DIVIDENDS

AMERICAN TIGER BRAND Mor-Spring Wire Lines are giving greater savings for drillers all over the country. The shock load resisting properties of Mor-Spring Lines tend to dampen out peak stresses which cause wire and rope breakage and frequently premature rope discard. The extra spring in these lines means more and better action from the tools as the holes are pounded down to completion.

U·S·S American TIGER BRAND Mor-Spring Wire Lines were developed especially for shallow hole oil, gas, and water well drilling. These Mor-Spring Lines are manufactured commonly in ¾" size. Distributors located in principal cities.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York
UNITED STATES STEEL

USS STEEL UNITED STATES STEEL

U·S·S American TIGER BRAND MOR-SPRING WIRE LINE

Canadian . . .

(Continued from page 7)

industrial water wells in that order, and usually makes a 5⅝" hole. He also has drilled many 5¼" blast holes for road, bridge, and airport construction jobs in his district.

Although the average depth of his water wells is 70 feet, Goodberry remembers the deepest hole he ever drilled which was still dry at 177 feet. Since the capacity of the equipment had been reached on this job, it was moved away with the intention of going deeper in the hole with a larger drill. To his surprise, Cecil shortly afterwards received a letter from the customer stating that the well had filled to within twelve feet of the top and was proving very satisfactory!

The owner of an ice cream plant in Almonte was very pleased with a 90-foot Goodberry well which pumped 60 gpm without lowering its water level. Since the town had been charging this customer on a meter basis for the water used, he saved all the cost of drilling and the pumping equipment in a short time.

Practically all drilling in this district goes through rock which varies from limestone in the south to granite in the north. A well started in granite may run into feldspar, and a well started in white limestone may run into granite. Also encountered are flint, blue limestone, and sandstone of various degrees of hardness. Strata of quicksand between rock layers often create difficult drilling conditions.

Average drilling speed is about 10 feet per ten-hour day in granite and 25 feet in limestone and rates for these kinds of wells run about $5.00 and $2.00 per foot respectively for 5⅝" hole. An extra long stem makes the string of tools about 22 feet long

• With over four feet of snow drifted by high winds, this Cecil Goodberry drill was stranded beside the road for a few days until a snowplow opened the side road on which the next job was located.

and increases their weight to about 1300 pounds to give added cutting power.

A 40-foot well in limestone with about 10 feet of casing was completed in one ten-hour day. On another job where the drill was set up at 11 a.m., a 52-foot well in sandstone was finished by noon of the following day. These were 5⅝" holes. On a 5¼" blast hole job, 105 feet were drilled in 24 hours, including moving the drill, for the Norman Roger Airport, Kingston, Ontario.

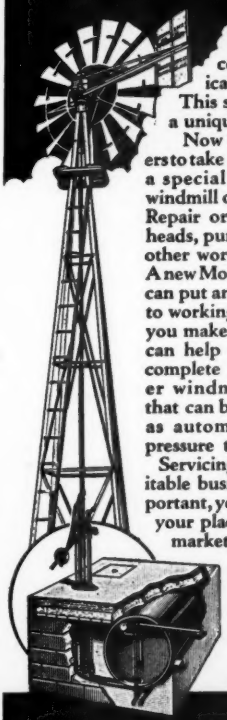
Explosion Rips Barn Roof

One farm well, drilled near the end of the barn, required special treatment with dynamite. It seems the farmer had a large tank in his barn which he wished to be able to fill at one pumping, but the rock formation of his well was so tight it produced a very slow flow. It was thought that a charge of dynamite would help develop it.

This 170-foot hole, 5⅝" in diameter, was cased down about 18 feet to solid rock. Hooks of heavy iron were forged and placed over the upper rim of the casing. Planks were laid over the hooks and nearly two tons of stone piled on the planks. Why all the precautions? Cecil didn't want to go Nazi and send a V2 rocket bomb hurtling over the international border.

Dynamite cartridges, made by tying nine sticks to a piece of wood about the size of a broom handle, were lowered gently on measured pieces of binder twine to make sure that they went to the bottom of the well. The upper end of the strings were tied at the top of the well, which had water to within 25 feet of ground level. Finally four sticks of dynamite with fuses about three feet long and caps well greased were weighted with a stone. After igniting the fuses and dropping this charge

Windmill Dealers— Here's An Idea You Can Use!



Hundreds of windmills over the country are in critical need of repair. This situation offers you a unique opportunity.

Now is the time for dealers to take the initiative. Make a special effort to contact windmill owners in your area. Repair or replace windmill heads, pumps, cylinders, and other worn or broken parts. A new Monitor windmill head can put an old tower back into working condition. When you make a service call, you can help the farmer plan a complete Monitor Sky Power windmill water system that can be attached as soon as automatic controls and pressure tank are available.

Servicing windmills is a profitable business, but more important, you will be reserving your place in a great future market for farm water systems. The Monitor factory is ready to furnish you with parts and new windmills. Contact windmill owners now.

Monitor
SKY POWER
WINDMILL WATER SYSTEM

BAKER MANUFACTURING CO.,
EVANSVILLE, WIS.

into the well, the men retired.

There were now three cases of 50% dynamite at the bottom of the well and everybody gazed anxiously at the hole, wondering what all that explosive might do. Suddenly the earth shook. A geyser of water burst from the well, ripped the boards off the barn gable, and sent them hurtling over the house 100 yards away. Part of the barn roof dissolved into the air.

Thus far, Cecil has always been able to recover any tools left in the hole, but he always keeps an extra string on hand — just in case. Since he discovered early in his career that large joints were needed for drilling in the hard rocks of this district, he uses 2 inch by 3 inch pins. By keeping his bits up to gauge and casing wells properly at the beginning to prevent surface stone or other objects from dropping into the hole, he has seldom had to use the jars. He dresses his own bits, and prefers the Bucyrus-Erie make because their deep waterways do not cushion the cutting blow under water. He uses both crucible steel and manila drill cables.

An interesting shortcut he has developed is the attachment of the string of tools to the derrick. Fastened in this manner, the drill is practically in a position to begin work as soon as the derrick is erected on a new location.

Making collections has never been a serious problem with Goodberry. If the well is satisfactory, Cecil says, customers are so pleased they won't let anything stand in the way of the driller getting his money. A 13-year-old son, Leslie, who is still attending school, is looking forward to the time when he can be initiated into the mysteries of drilling wells and use his father's formula for well drilling success.

The JENSEN Unit Makes a Good Well More Satisfactory

Many drillers always recommend the JENSEN Water Well Pumping Unit because it is likely to make a good well more satisfactory. The JENSEN is the world's best assurance of cheap, dependable water from any well 100 feet deep or deeper. In 25 years JENSEN Pumping equipment has never been junked because parts were not available. Used and approved throughout the nation by farmers, ranchers, cities, industries, public utilities and others.

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Mailbag . . .

(Continued from page 14)

the hard surfacing material is properly applied to the bit. One of the requisites of a successful hard surfacing job is the proper technique of application which is quite different from that of welding steel to steel. Most manufacturers of hard facing rods print special instructions applicable to their own products which should be followed closely. The welders' Guide published by Mir-O-Col Alloy Co., 2416-60 East 53rd St., Los Angeles, Calif., for instance, contains directions for hard facing well drill bits and will doubtless be helpful to you in the event you decide to try it.

One of the things emphasized is, due to the weight and heavy section of a drill bit, heat is transmitted very rapidly and the hard facing must be run hot in order to make a solid bond and remain fluid long enough to settle into a smooth deposit. It is, therefore, essential to preheat the end of the bit to about 700° before beginning the welding or hard facing.

"Llewellyn enjoys fishing jobs"

Profitable shallow well drilling calls for Macwhyte "Hi-Lastic," because "Hi-Lastic" gets more work done quicker. It strikes harder, faster blows . . . keeps the bit turning better on all types of formation . . . helps reduce tendency for the hole to get out of round, and for the bit to channel. "Hi-Lastic" is internally lubricated for longer life. No manilla cracker needed.

For profitable deep well drilling use Macwhyte Standard Cable-Tool Lines. Just the right elasticity to strike long, hard, sharp blows.

For fast bailing use Macwhyte Sand Lines. Coarse laid (6 x 7) or soft laid (6 x 19), Mild Plow Steel. 826

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To the reader who wishes to advertise used equipment in "Bargain Counter" Section.

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: 50c per line. Minimum charge $1.20. No discounts; no commissions. Read these instructions carefully. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Count your own copy to save delay. Holding up your advertisement one month to secure approval of revised copy or an additional remittance, may cost you real money in a lost sale. Be sure to enclose the correct amount of money with your order. Closing date—10th of preceding month. Example—January issue closes December 10th.

To the reader wishing to answer "Bargain Counter" Section advertisements appearing on these pages:

Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of THE DRILLER, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

DRILLS

Clipper drill, 1100' capacity, wood frame and mast. Waukesha 4 cyl. eng. mounted on 5 ton White truck nearly new solid tires. Includes 17'x14" stem, rope socket, 3-6" bits and wrenches, $1050.

Clipper drill 450' capacity, wood frame, steel mast. Buick 6 cyl. engine on 1½ ton Int'l. truck, pneumatic tires. Price without tools $1100.

Machines sheave equipped for manila rope. Can apply shock absorbers for wire line. Located in Ohio. Box 0535

1 No. 3 Keystone mounted on Indiana truck having pneumatic tires. Machine suitable for use with either wire or manila cable. Capacity of machine 500' 6", 8" and 10" holes. Ready to go to work. Cash price $1000.00 without tools. Located in New Jersey. Box 0346

Cyclone cable rig with tools. Can put in 6 in. to 30 in. wells. Also jetting type rig and tools, truck mounted, suitable for 2 to 4 in. wells. Will sell both rigs and business together or separately. If interested, send for list of tools with each outfit and prices. L. R. Burt, 2134 N. Church St., Decatur 12, Illinois.

Sparta 10 wood frame drilling machine, mounted on four solid rubber tired wheels. LeRoi motor. Derrick with shock absorber. Machine suitable for drilling wells to 8" diameter. In good condition. Has about 500' of drilling cable. Price $400. Box 0565

FOR SALE
One 35-W Armstrong drill mounted on International truck with cable and tools. Located in Central Connecticut. Box 0376

Two all-steel rigs. A-1 condition. Each engine rebuilt, new rings, carburetors, mags, etc. Each mounted on A-1 Ford '35 dual trucks. Good rubber. Bucyrus, Hi-Mast 21-W, new 1941. 71 Speed Star. 40' Tel. Mast, new 1940 Drill and sand lines, no tools, few extras. Bucyrus: $3200. Star: $4500. Cash on Barrelhead. Detroit. Box 0336

No. 32 Star Drilling Machine. Mounted on 1927 Reo truck both in A-1 condition. Located in eastern Connecticut. Box 0525

FOR SALE

1 Keystone No. 3 wood frame well drill with 34 ft. derrick, mounted on Oshkosh truck with cab. Tools include 6 inch string and 4½ in. string. Complete with bailer, forge, pipe and tool wrenches, and lifting jack. All in A-1 condition ready to go to work. E. G. Suckow, Athens, Wis.

1—No. 3 Keystone mounted on Indiana truck having pneumatic tires. Machine suitable for use with either wire or manila cable. Capacity of machine 500' 6", 8" and 10" holes. Ready to go to work. Cash price $1000. without tools. Parkhurst Well & Pump Co., 799 Bloomfield Ave., Verona, N. J.

MISC.

1600' of ¾" drill cable and 1200' of ½" sand line. Drilling tools optional for 6", 8", 10" holes. 20' Drill stem. Jars, swivel-wire-rope socket, Barrett Circle Jack. 4" Tool Wrenches. Cable and Tools in A-1 shape. Henry Schuster, Golden, Illinois.

One set rig irons 4" with sand reel. One 5" stem 3 by 4—7. One set 8" bits 5'. One set 4½" wrenches. Temperscrew 6'. Many other tools. Calvin Neely, 527 W. High St., Lima, Ohio.

New dart valve bailer 10" x 10 ft., 3/16" stock, also good Saunders 4-12" pipe threading machine. Cost $150. Sell $120. Stewart Bros., Schenectady 2, N. Y.

WANTED

Used well machine in good condition. Bucyrus-Erie 21-W, 33-W, or Armstrong 35. Please include information on price, equipment included, location of machine. Box 0432

Bucyrus-Erie 33-W, Keystone 70 or Star 71, truck mtd., with or without tools. H. Jones, Rt. 10, Fairfield, Conn.

One or two all steel drills, with or without tools. Give condition, age, size, lowest cash price. F. N. Hagmann, Jr., Vienna, Virginia.

Cable or jetting type drill. Prefer combination jetting and cable tool rig but will consider standard machine. Box 0366

Bit Dressing Machine for 6", 8", 10", 12" bits. Parkhurst Well & Pump Co., 799 Bloomfield Ave., Verona, N. J.

HELP WANTED

Experienced well drillers and well drillers helpers for sand and rock work. Permanent all year steady employment. Good wages, time and a half for overtime. Write fully to Box 0545.

Drillers wanted for 33W's. Steady work. All the hours you want. Libby & Freeman, P. O. Box 2201, Orlando, Fla.

Experienced water well driller. Earn good wages on footage or weekly basis. Steady work. Northwestern Connecticut. Box 0356

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